

太平洋 LLSVP 西端の S 波速度構造についての新たな制限 New constraints on S-wave velocity structure near the western edge of the Pacific LLSVP

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S-wave velocity structure near the edge of the Pacific Large-Low Shear Velocity Province (LLSVP) has been examined by many researchers (e.g., He et al., 2006; He and Wen, 2009; Takeuchi et al., 2008; Idehara et al., 2013). They have mainly used the differential travel times of ScS-S observed by global or local broadband networks (e.g., IRIS GSN, F-net, CNDSN and so on). Here we add the new data of ScS-S and S-SKS travel time data obtained by NECESSArray and a temporal broadband ocean bottom seismograph network in the Philippine Sea by the Stagnant Slab Project (SSP-BBOBS) (Shiobara et al., 2005).

ScS-S anomalies observed by NECESSArray in conjunction with those by F-net, which covers the region beneath the eastern Micronesia, are roughly explained by the existing 3D S-wave models. However, S-SKS anomalies, which are affected by S-waves propagated near the base of the mantle beneath the western Micronesia and the north of New Britain Island, suddenly changes from positive in the eastern area to almost zero or slightly negative in the western, whereas all the models predict large positive anomalies without significant changes. To confirm this S-SKS observation, we further examined ScS-S anomalies observed by the SSP-BBOBS. Some data indicate nearly zero in the corresponding area although the data are scattered and still sparsely distributed. Since a low velocity anomaly beneath the New Guinea Island are confirmed by Takeuchi et al. (2008) and Idehara et al. (2013), our observation suggests that the Pacific LLSVP is separated beneath the north of New Britain Islands. The models of 3D mantle structure are possibly insufficient near the western edge of the Pacific LLSVP.

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